

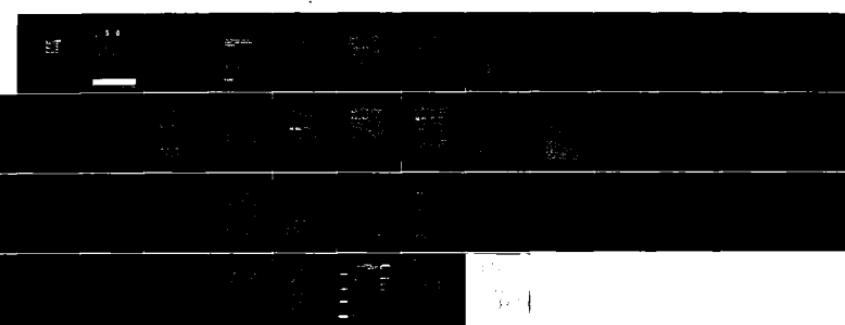
AC-9133 296 THE FINANCIAL COST OF EXPORT CREDIT GUARANTEE PROGRAMS 1 1
101 RAND CORP SANTA MONICA CA D P HENRY JUN 3
RAND R-3491-UCDP MDA903-85-0-0030

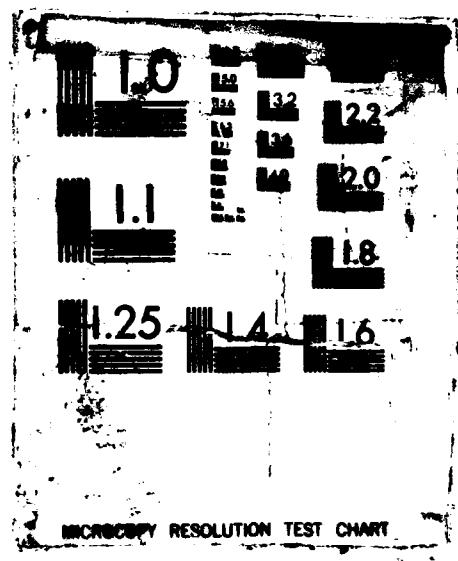
UNCLASSIFIED

FIG 5/3

NL

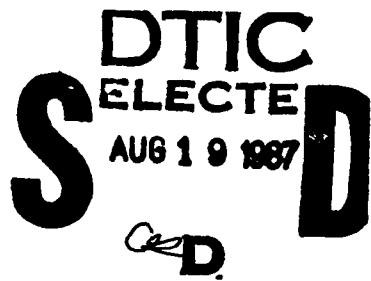
ST





MICROSCOPY RESOLUTION TEST CHART

UFG. EME. COPY

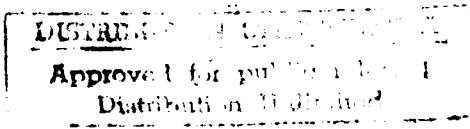


(12)

The Financial Cost of Export Credit Guarantee Programs

AD-A183 296

Donald Putnam Henry



RAND

NATIONAL DEFENSE
RESEARCH INSTITUTE

67 8 14 053

The research described in this report was sponsored by the Office of the Under Secretary of Defense for Policy under a Federally Funded Research and Development Center relationship with the Office of the Secretary of Defense, Contract No. MDA903-85-C-0030.

Library of Congress Cataloging in Publication Data

Henry, Donald Putnam, 1957-

The financial cost of export credit guarantee programs.

"Prepared for the Office of the Under Secretary of Defense for Policy."

"June 1987."

"R-3491-USDP."

Bibliography: p.

1. Export credit—United States. 2. Insurance.
Export credit—United States. I. United States.
Office of the Under Secretary of Defense for Policy.
II. Title.
HG3754.5.U6H46 1987 382'.63 87-4630
ISBN 0-8330-0794-7

The RAND Publication Series: The Report is the principal publication documenting and transmitting RAND's major research findings and final research results. The RAND Note reports other outputs of sponsored research for general distribution. Publications of The RAND Corporation do not necessarily reflect the opinions or policies of the sponsors of RAND research.

Published by The RAND Corporation
1700 Main Street, P.O. Box 2138, Santa Monica, CA 90406-2138

R-3491-USDP

The Financial Cost of Export Credit Guarantee Programs

Donald Putnam Henry

June 1987

**Prepared for the
Office of the Under Secretary of Defense
for Policy**

RAND

Approved for public release; distribution unlimited

PREFACE

This study examines the financial costs—the actual government outlays—that result from subsidizing official export credits. Substantial amounts of money, far more than generally acknowledged, are needed to support official export lending. Consequently, this study should be of interest to export credit agencies and to policymakers who are negotiating reductions in subsidised export credits. The results should also be valuable to a wider audience interested in international trade policy and government intervention in financial markets.

This research was conducted within RAND's International Economic Policy Program as part of its work for the Under Secretary of Defense for Policy under the National Defense Research Institute, RAND's Federally Funded Research and Development Center supported by the Office of the Secretary of Defense.

Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A1	



SUMMARY

Numerous studies have concluded that officially supported export credits are heavily subsidized. Curiously, many of these programs are reporting financial profits. This study shows that these apparent profits result from inappropriate or misapplied accounting methods, and that subsidized credits do in fact impose substantial financial burdens on those governments that advance them. This is a valuable result because elegant econometric estimates of subsidies frequently do not show policymakers the bottom line losses that are the direct result of these subsidies.

Cross-national comparisons of financial data are often difficult, but the figures in Table S.1 were culled and extracted from the financial reports of four major export credit programs. All these programs are advancing credits that entail significant financial costs.

A close examination of Eximbank, the official export credit agency in the United States, was used to show the divergence between reported and actual financial costs of some export credit agencies. Eximbank claims a net worth of \$1 billion. In fact, Eximbank's net worth is probably negative. Properly accounted and evaluated, its liabilities exceed its assets by \$1.2 to \$2 billion. The cost of Eximbank to U.S. taxpayers since its inception is somewhere between \$3.2 and \$4 billion.

Table S.1
COMPARATIVE FINANCIAL BURDEN OF EXPORT
CREDIT PROGRAMS
(Millions of dollars)

Year	Country (Agency)			
	Germany (Hermes)	U.K. (ECCD)	France (COFACE)	U.S. (Eximbank)
1979	\$10.8	\$196.6	\$421.1	\$84.4
1980	94.1	214.9	367.9	997.0
1981	98.3	122.9	382.1	172.7
1982	111.6	316.1	502.0	127.1
1983	268.9	381.4	—	278.1
1984	—	—	—	781.9

Eximbank's current net worth was estimated by recalculating Eximbank's books according to generally accepted accounting principles (GAAP). Eximbank, unlike private banks, does not set aside reserves based on expected losses, nor does it stop accruing interest on non-performing loans. These changes were made to bring Eximbank's books into agreement with GAAP. In addition, Eximbank lends out money at less than the cost of its funds. For years into the future, Eximbank will lose money on these loans. These future losses were discounted and then subtracted from Eximbank's net worth previously calculated according to GAAP. The cost of Eximbank to the taxpayers was calculated by subtracting Eximbank's current value from its original value. Added to this figure was the interest that taxpayers have been paying on Eximbank's capital loss dividends that Eximbank has returned to the Treasury.

This report does not attempt to gauge the benefits, if any, of officially supported export credits. It does appear, however, that export credit programs have been justified and continued with ridiculously low estimates of their costs. These cost estimates should provide governments with a more accurate basis to make decisions about continuing to fund these programs.

CONTENTS

PREFACE	iii
SUMMARY	v
TABLES	ix
Section	
I. INTRODUCTION	1
The Issue	1
Accounting Problems	2
Making Sense of the Financial Data	3
II. SUBSIDIES AND FINANCIAL LOSSES	5
A Definition of a Subsidy	5
A Working Definition of Export Credit Subsidies	6
Market Valuations of Loans	7
Equivalence of Subsidies and Financial Losses:	
Immediate Liquidation	7
Non-Equivalence of Subsidies and Financial Losses:	
Paper Held to (and Past) Maturity	7
The Value of Notes in a Discount Market	8
Non-Equivalence of Subsidies and Financial Losses:	
Paper Held to (and Past) Maturity Revisited	9
The Value of Notes in a Discount Market Revisited:	
Risk Aversion	10
Non-Equivalence of Subsidies and Financial Losses:	
Paper Held to (and Past) Maturity	
Revisited Again	11
III. COMPARISON OF MAJOR EXPORT CREDIT PROGRAMS	13
IV. ESTABLISHING PROPER FINANCIAL ACCOUNTS FOR EXIMBANK	19
Reported Performance	19
A Balance Sheet Approach	20
Converting Accounts to GAAP	20
Estimating Eximbank's Market Value	23
Opportunity Cost of the Eximbank	25

V. CONCLUSIONS	28
Appendix: DERIVATION OF FINANCIAL PERFORMANCE MEASURES	29
BIBLIOGRAPHY	37

TABLES

S.1. Comparative Financial Burden of Export Credit Programs	v
1. Income Statement: Immediate Liquidation Case	8
2. Income Statement: Hold to Maturity, Certain Repayment	9
3. Income Statement: Hold to Maturity, Uncertain Repayment, Risk Neutrality	10
4. Income Statement: Hold to Maturity, Uncertain Repayment, Risk Aversion	12
5. Income Statement: Hold to Maturity, Uncertain Repayment, Risk Aversion, and Complications	12
6. Size of Export Guarantee Programs	14
7. Officially Supported Credits and Exports, 1982	15
8. Losses and Recoveries	16
9. Comparative Performance Measures	17
10. Eximbank Balance Sheet: September 30, 1984	21
11. Loss Reserves for the Eximbank	23
12. GAAP Adjusted Eximbank Balance Sheet: September 30, 1984	24
13. Market Value Eximbank Balance Sheet: September 30, 1984	26
A.1. Performance of Hermes	30
A.2. Financial Performance of the Export Credit Guarantee Department	31
A.3. Financial Performance of COFACE	32
A.4. Financial Performance of Eximbank	33
A.5. Ratios, Terms, and Recovery Rates	34

I. INTRODUCTION

THE ISSUE

Previous research indicates that officially supported export credits are heavily subsidized.¹ Many nations offer these loans at lower interest rates and to riskier borrowers than loans advanced by commercial banks, and many commercial banks have run into trouble as a result of their international loans. Beneficiaries of these credits, however, often claim that these programs cost taxpayers nothing. Some claims about these programs are so extravagant as to include small profits for the governments that make these loans.² Such unlikely assertions find some support in the financial statements of export credit agencies. For instance, the Eximbank of the United States shows a profit on its books for every year from 1934 through 1981.

The actual budgetary costs of these programs are important because a mountain of subsidies would amount to less than half a hill of beans to many policymakers if it imposed no financial burden on the exporters' governments. Without some corresponding budgetary costs, subsidies that are identified through elegant analytical exercises are often thought to be inconsequential to policymakers concerned with budget burdens. As this report will show, the subsidy in official export credits and their budgetary burden are not always exactly equivalent. Nonetheless, there is a very close relationship between subsidies and financial costs.

How then is it possible for an agency such as the Eximbank to subsidize its loans and show a profit on its books? Either the subsidy calculations or the financial statements are a long shot from the true budgetary burdens of these programs. This discussion will show that the budgetary costs of officially supported export credits are real, substantial, and close to the subsidy estimates. Reported financial

¹See, for example, D. F. Kohler, S. W. Salant, D. P. Henry, K. W. Crane, and M. M. Hopkins, *Economic Cost and Benefits of Subsidizing Western Credits to the East*, The RAND Corporation, R-3129-USDP, July 1984; D. F. Kohler and K. T. Fisher, *Subsidization of East-West Trade Through Credit Insurance and Loan Guarantees*, The RAND Corporation, N-1951-USDP, January 1983; John Boyd, "EXIM Lending: A Federal Program that Costs Too Much," *Federal Reserve Bank of Minneapolis Quarterly Review*, Winter 1982, p. 1; David Baron, *The Export-Import Bank*, Academic Press, New York, 1968; and Richard E. Feinberg, *Subsidizing Success: The Export-Import Bank in the U.S. Economy*, Cambridge University Press, New York, 1982.

²One example is Stuart Eisenstat, "EXIM Bank: A Wise Investment," *Aerospace*, Spring 1982.

performances of these agencies, on the other hand, diverge significantly from their true budgetary costs.

ACCOUNTING PROBLEMS

The reasons for the divergence between the financial costs reported by export credit agencies and the true costs of these credits are numerous. This is not a case of deliberate distortion or intentional deception, although managers of most of these agencies probably prefer to put their activities in the best possible light. Rather, the divergence of actual and reported financial costs has several sources: (1) mistaken beliefs about the risks of international lending, (2) a desire to make financial records perform functions aside from showing costs, and (3) accounting conventions that, while properly applied, produce nonsensical results for the export credit agencies. A few of these problems will be discussed below.

The Myth of Sovereign Solvency

Until recently, there was a widespread belief among private bankers and official creditors that sovereign borrowers will ultimately repay their loans in full. Outright default by official borrowers was unthinkable to many. It was often argued that private borrowers might come and go, but nations never die: they will always be around to service their debts. Little thought was apparently given to how a claim against a recalcitrant foreign borrower could be enforced. Also overlooked was the fact that governments have considerably shorter lifespans than nations, and not all new governments willingly inherit the debts of their ancestors. A particularly insidious aspect of this belief is that it is impossible to refute: no matter how long payments are overdue, it is still possible that they will be paid in full with interest.

The proposition of sovereign solvency finds little support in history. The long history of financial "correctness" by the governments of England, Switzerland, the United States and, since World War II, most market oriented industrial nations might have lulled public and private lenders into the delusion that such financial "correctness" is a universal constant. Few people still hold such beliefs about sovereign loans, but such beliefs remain embodied in the accounting practices of export credit agencies. For example, the Eximbank still carries prerevolutionary Cuban and Chinese loans on its books at full face value.

The Diplomat's Touch

Official export credits are often only one small component of the relations between a creditor nation and a debtor nation. Sometimes it is argued that a creditor government's declaration that loans to a debtor nation have scant probability of repayment might sour other more important relations with the debtor. This is undoubtably true in some cases. There are two reasonable courses to follow: (1) reflect the impaired value of loans in the financial statements without explicitly attributing the impairment to specific countries,³ or (2) not claim that the accounts accurately represent the financial costs of the program.

The Little Stick Approach

Some have also argued that writing off or writing down loans to countries that are unlikely to repay their debts will reduce the probability that these debts will be repaid. The idea is that countries whose repayment prospects are marginal should be treated gently. This is not a wholly implausible argument, but the solutions are the same as above: Don't report publicly country-specific write downs or abandon the financial statement as a measure of cost.

The Baffled Approach

Some export credit agencies claim that it is impossible to accurately predict losses on international loans, so they use a loss prediction that they know is wrong: no losses. This argument holds little water even if one accepts that agencies that have no idea of how to predict loan losses should make loans. Commercial banks make these sorts of assessments in preparing their financial statements. Other government agencies also make these assessments in many countries. An informed guess about the size of expected losses almost certainly will be better than a guess of no losses.

MAKING SENSE OF THE FINANCIAL DATA

In many ways, an accurate bottom line is a meaningless figure for most export credit agencies. Since they are normally backed with the full faith and credit of their respective governments, they can never be run out of business. Their ability to borrow money is not impaired by poor or obviously flawed financial statements. Policymakers are a

³Commercial banks use this method.

group that might have a stake in producing accurate accounts as they influence the size of export credit programs. Export credit agencies might have some interest in keeping these people in the dark. Designed to assist trade policymakers, this report tries to use financial data from a number of export credit agencies to provide rough estimates of the costs of these programs. First, the connection between export credit subsidies and the budgetary costs that result from these subsidies is explored. Then, the financial performances of several large programs are compared. Finally, the Export-Import Bank of the United States (Eximbank) is analyzed in more detail.

This paper attempts to fill a gap and provide meaningful financial information on export credit programs. Because the numbers presented here are derived only from annual reports and other publicly available information about these programs, and because this information was not designed to support an effort such as this, the precision of the numbers is questionable in some cases. Nonetheless, the overall flavor of the results is reasonably accurate.

II. SUBSIDIES AND FINANCIAL LOSSES

A major cause of concern about officially backed export credits is that they are heavily subsidized and therefore impose large costs on the governments that advance them. At first glance, credit subsidies appear to be the flip side of financial losses suffered by export credit agencies, but this relationship is not precise. This section closely examines the connection between export credit subsidies and the financial losses of export credit agencies.

A DEFINITION OF A SUBSIDY

A plausible, defensible, and comprehensible definition of a subsidy is the cornerstone of this sort of analysis. In this report, the following definition will be used:

An actor confers a subsidy if he provides something of greater value than he directly receives in a transaction.

A few concrete examples give this definition substance.

- A government buys wheat from farmers at a price above the market price. The government is conferring a subsidy—it is providing money which has a greater value than the wheat it receives in return.
- A city gives a parcel of land to a firm to build a plant. The city is conferring a subsidy because it is giving land, which has value, and receives no direct compensation. To be sure, the city might ultimately collect more than the value of the land in new property taxes on the plant. This, however, is not received directly in the transaction.
- A commodity dealer provides wheat worth \$3.00 per bushel to a granary under a futures contract previously entered into at \$2.00 per bushel. No subsidy is provided here: the granary paid the dealer \$2.00 for future wheat which also had a value of \$2.00. After this transaction took place, relative values changed. Subsidies should be judged by values of a transaction at the time of the transaction. Subsequent changes in the values of exchanged assets do not alter the presence or absence of subsidies.

- An investor buys the bonds of a risky company. Although these bonds pay a high coupon rate, the company goes bankrupt and the investor receives nothing. No subsidy is provided here: The investor is compensated for the possibility of bankruptcy by the higher than normal interest rates. He simply takes a gamble and loses.

According to the definition developed here, a subsidy is the difference between the values of two exchanged items at the time of the exchange. To calculate subsidies according to this definition, it is necessary to place values on what is exchanged in a transaction. If difficulties arise in calculating subsidies, they usually arise in placing values on the exchanged items.

A WORKING DEFINITION OF EXPORT CREDIT SUBSIDIES

In an export credit transaction, an exporter sells goods to a foreign buyer. The foreign buyer in turn provides an export credit agency with paper—promises to pay specified amounts at some time in the future. Finally, the export credit agency provides the exporter with cash. From the point of view of the export credit agency, cash is exchanged for promises by the foreign buyer to pay specified amounts of money at some time in the future.¹ When are such transactions subsidized? Using the definition proposed above, these transactions are subsidized when the promises made by the foreign buyer to pay money in the future have a lower value than the cash that the export credit agency puts into the transaction. It is very easy to place a value on the cash advanced in an export credit transaction. Money is the normal numeraire, and the cash advanced is already denominated in units of money. The difficulty arises in trying to place a value on foreign notes.

¹Both the foreign buyer and the exporter might be able to appropriate part of any subsidy provided by the export credit agency. The division of the subsidy between these two actors is analogous (but opposite in sign) to the incidence of a tax between a buyer and a seller. While the division of the subsidy between the exporter and the foreign buyer is an important issue, it is not an important issue here.

MARKET VALUATIONS OF LOANS

Placing an "objective" valuation on loans is indeed difficult. Determining what factors should make a loan more or less valuable is inevitably a controversial task. But placing an "objective" valuation on loans is the wrong problem: the important question is what the loans are worth, not what they "should" be worth. Loans are worth the price for which they can be sold (or bought). There are active markets, both primary and secondary, for international loans. These forums can be used to observe the value of loan payments exchanged in an export credit transaction. The question of what (besides "the market") drives the value of foreign notes is temporarily side-stepped. More will be said on this later.

EQUIVALENCE OF SUBSIDIES AND FINANCIAL LOSSES: IMMEDIATE LIQUIDATION

In some cases, the financial losses of export credit agencies are exactly equal to the subsidies that the agencies provide. Consider a simple example. An export credit agency comes into being. It advances money for one transaction and receives a pile of foreign notes in return. There are no transaction costs and no up-front fees. The agency sells these notes in a secondary market, and the agency is immediately liquidated.² If the agency is able to sell the paper for the same amount that it advanced, then the transaction is unsubsidized. If, on the other hand, the paper sells for less than the funds advanced, then the transaction is subsidized. The government (or some other backer) must provide the difference between the advanced funds and the value of the paper. In this simple case, the subsidy on the loan is equal to the financial loss of the export credit agency. An income statement depicting this is shown in Table 1.

NON-EQUIVALENCE OF SUBSIDIES AND FINANCIAL LOSSES: PAPER HELD TO (AND PAST) MATURITY

Unfortunately from an analytical point of view, export credit agencies do not immediately liquidate the foreign notes that they receive. If anything, the opposite is true: these agencies almost never liquidate their assets. While the method of calculating subsidies described above (cash advanced less liquidation value of notes received) remains valid,

²Alternatively, an on-going agency could immediately liquidate the paper that it receives in each transaction. Subsidies and financial losses would still be equivalent.

Table 1
INCOME STATEMENT: IMMEDIATE LIQUIDATION CASE

Revenue:	
Proceeds from sale of foreign paper X
Expense:	
Cash advanced for purchase of foreign paper Y
Profit/(loss) (Y - X)
Subsidy Y - X
Difference between subsidy and loss 0

financial losses need not equal these subsidies. In order to find the relationship between subsidies and financial losses when foreign notes are not immediately liquidated, it is necessary to address the previously ignored question: What drives the value of foreign notes in the secondary markets?

THE VALUE OF NOTES IN A DISCOUNT MARKET

It is almost tautological to say that the value of notes in a discount market depends upon what investors are willing to pay for the notes. There is some usefulness, however, in emphasizing that traits of available investors are one determinant of the value of notes. Several assumptions, which will be used in the remainder of this analysis, will be made about these potential investors. First, investors desire to hold foreign notes solely for the possibility or certainty of future repayment. Thus investors do not buy Israeli notes because they like Israel or shy away from Soviet or South African notes because they find these countries repugnant. Second, investors have a wide spectrum of possible investments to choose from, and foreign notes are just one possible choice. Third, the investors are anonymous to the borrower. In other words, repayment prospects for a note do not depend upon who owns the note. Of course, none of these assumptions is true in all cases, but they are perhaps good approximations for the vast majority of foreign loans.

In the simplest case, where repayment is certain, investors simply use a risk free discount rate to calculate the present value of a note. If a note involves only one repayment, then

$$\text{Value}_t(N) = R(N)/(1+r)^k = PDV_t(R(N), r, k)$$

where $\text{Value}_t(N)$ is the value of a note at time t , which is equal to the present discounted value of the repayment, where $R(N)$ is the repayment amount, k is the number of periods until repayment, r is the discount rate, and PDV is the present discounted value function which has $R(N)$, r , and k for arguments.

In a slightly less simple case, the repayment amount might be uncertain, but the marginal investor might be indifferent to all types of uncertainty. In other words, the marginal investor is risk neutral. The market will then evaluate foreign notes at their expected present discounted value:

$$\text{Value}_t(N) = E_t(PDV_t(R(N), r, k))$$

where $E_t(x)$ is the value of x that is expected at time t .

NON-EQUIVALENCE OF SUBSIDIES AND FINANCIAL LOSSES: PAPER HELD TO (AND PAST) MATURITY REVISITED

In the two cases just mentioned—certain repayment or risk neutral investors—the relationship between subsidies and financial losses can be examined. In the first case, repayments are certain. If interest rates do not change from expected levels from the time that the funds are advanced until repayment (or if the export credit agency hedges against interest rate changes), then the subsidy on the credit transaction is equal to the present discounted value of losses suffered by the agency. An income statement is shown in Table 2.

Table 2

INCOME STATEMENT: HOLD TO MATURITY, CERTAIN REPAYMENT

Revenues (discounted):	
Repayments on notes	PDV _t
Expenses:	
Cash advanced (or discounted interest and principal of funding advance of cash)	Y
Profit (loss) (discounted)	(Y - PDV _t)
Subsidy	Y - PDV _t
Difference between subsidy and loss	0

In the second case, repayments are uncertain. The actual financial performance of the export credit agency will depend on what repayments actually are made. The subsidy, on the other hand, depends on expected repayments. The subsidy is thus equal to the expected losses (discounted) of the agency; the actual losses might be higher or lower. An income statement is shown in Table 3.

THE VALUE OF NOTES IN A DISCOUNT MARKET REVISED: RISK AVERSION

So far it has been assumed that repayments are certain and hence there are no risks to foreign loans or, alternatively, loan repayments might be uncertain but investors are risk neutral. Repayments of foreign loans are definitely not certain. Nor is it a good a priori assumption to believe that investors are risk neutral. Consequently, it is valuable to examine what happens when risk-averse investors are faced with risky foreign loans.

An investor's reaction to an asset with an uncertain return depends upon the spectrum of other assets available to him. It is possible (although unlikely) that a risky asset might be more valuable to a risk averse investor than an asset with a certain return. This might happen if the return on the risky asset is negatively correlated with the return of the rest of the investor's portfolio. The addition of this sort of a risky asset to a portfolio might reduce the overall variance of the portfolio whereas the addition of a riskless asset has no effect on the overall variance of the portfolio.

Table 3

INCOME STATEMENT: HOLD TO MATURITY, UNCERTAIN REPAYMENT, RISK NEUTRALITY

Revenues (discounted):	
Repayments on notes	PDV ₁
Expenses:	
Cash advanced (or discounted interest and principal of funding advance of cash)	Y
Profit (loss) (discounted)	(Y - PDV ₁)
Subsidy	Y - E(PDV ₁)
Difference between subsidy and loss	PDV ₁ - E(PDV ₁)

In this analysis, however, the financial economists' frank show of risk behavior oddities will be ignored. Investors will place lower values on assets with higher variances. If this is the case, then investors will value risky assets at less than the expectation of the present values of their repayments. The variances that are important here are the variances of the present values of the repayments of the foreign notes and, possibly, the variances of the time of repayment of these notes.

NON-EQUIVALENCE OF SUBSIDIES AND FINANCIAL LOSSES: PAPER SHIELD TO (AND PAST) MATURITY REVISITED AGAIN

What are the implications of the lower values that investors place on risky assets? If an export credit agency holds a risky asset until maturity, the present value of the expected return will be greater than the value of the asset. The difference is, by definition, a risk premium. If marginal investors require a risk premium before they will hold a risky asset, then it is possible for an export credit agency to subsidize loans without undertaking expected losses. The agency can avoid the expectation of financial losses merely by holding the subsidy offered on loans below the risk aversion premium required on such loans. This is because subsidies exceed expected losses by the risk aversion premium.³ Subsidies and expected losses are no longer equal. An income statement is provided in Table 4.

Further complications can be added to the model developed here. Until now, interest rate expectations have been perfect. If interest rates do change, then export credit agencies can suffer large losses or make large profits. As mentioned before, this risk is completely diversifiable: an export credit agency can fund a loan on terms similar to those at which it makes the loan. But just because an export credit agency is able to match the maturities of its assets and liabilities does not mean that it will do so. Subsidies and losses might further diverge because of funding risks. Up-front fees and administrative costs should also be included in any complete analysis of the finances of an export credit agency. Again, a sample income statement is provided in Table 5.

³Of course, actual losses might be above or below this level.

Table 4

INCOME STATEMENT: HOLD TO MATURITY, UNCERTAIN
REPAYMENT, RISK AVERSION

Revenue (discounted):	
Repayments on notes	PDV _t
Expense:	
Cash advanced (or discounted interest and principal of funding advance of cash)	Y
Profit (loss) (discounted)	(Y - PDV _t)
Subsidy	Y - (E(PDV _t) - RAP)
Difference between subsidy and loss	PDV _t + RAP - E(PDV _t)

NOTE: RAP is the risk aversion premium.

Table 5

INCOME STATEMENT: HOLD TO MATURITY, UNCERTAIN
REPAYMENT, RISK AVERSION, AND COMPLICATIONS

Revenue (discounted):	
Repayments on notes	PDV _t
Fees	FEES
Total	PDV _t + FEES
Expense:	
Cash advanced (or discounted expected interest and principal of funding advance of cash)	Y
Pending loss (or profit)	FUND
Administrative costs	ADM
Total	Y + FUND + ADM
Profit (loss) (discounted)	(Y + FUND + ADM - PDV _t - FEES)
Subsidy	Y - (E(PDV _t) - RAP) + ADM - FEES
Difference between subsidy and loss	PDV _t + RAP + FUND - E(PDV _t)

NOTE: ADM are administrative costs of a loan and FEES are fees collected for a loan.

III. COMPARISON OF MAJOR EXPORT CREDIT PROGRAMS

This section compares the performance of four major export credit programs: Hermes Kreditversicherungs AG in Germany, the Export Credit Guarantee Department (ECGD) in the United Kingdom, the Compagnie Francaise d'Assurance pour le Commerce Exterieur (COFACE) in France, and the Eximbank in the United States. These four programs form a significant share of the official export credit market, and useful financial information is available for each program. The analysis strives to find performance measures that are comparable across programs rather than study, in detail, individual programs. Consequently, the information provided here will be more useful in assessing the performance of these programs relative to each other rather than their performance compared to commercial or other standards. For example, the figures presented in this section are not discounted. A closer examination of Eximbank's finances, which can be used as a bench mark, is provided separately in the next section.

The relative sizes of the four programs are shown in Table 6. The Eximbank program is the smallest of the four both in terms of new loans and loans outstanding. The ECGD supports more new loans than any of the other programs, but most of these loans are short-term supplier credits, and therefore ECGD's outstanding loans are less than those of either Hermes or COFACE. The share of exports covered by official guarantees for each country in 1982 is shown in Table 7. The rank ordering for exports and official loans are almost exact opposites.

Official export credit agencies subsidize loans in two ways. First, they advance loans at interest rates below the interest rates at which they borrow. Second, they advance risky loans at terms that do not reflect the underlying risk. No comparisons are made here of the first type of subsidy; they are discussed in other project reports. The second type of subsidy is really an insurance subsidy in that the government assumes risk on behalf of the exporter. Whether the export credit agency explicitly guarantees or insures payments on loans or advances the loans directly and self-insures repayment, the principle is the same: the agency, in return for fees and premiums, insures the lender against losses from non-payment of the loans. The performance in this sort of insurance business can be compared across the export credit programs.

Hermes, ECGD, and COFACE all function as export credit insurers. If interest rate subsidies are provided, they are accounted for

Table 6
SIZE OF EXPORT GUARANTEE PROGRAMS
(Millions of dollars)

Year	Agency			
	Hermes	ECGD	COFACE	Eximbank
New Loans				
1979	\$13,694.1	\$34,444.2	\$17,205.7	\$9,491.2
1980	15,679.2	39,658.8	18,458.9	12,609.2
1981	16,106.2	35,492.3	17,480.6	12,854.1
1982	16,154.3	33,417.0	19,932.7	9,348.0
1983	13,041.9	26,963.2	—	9,369.2
1984	—	—	—	8,615.8
Loans Outstanding				
1979	\$55,976.9	\$38,157.0	\$60,878.1	\$28,699.3
1980	64,092.0	44,897.6	68,629.3	33,161.6
1981	60,088.5	51,772.3	69,922.3	38,406.2
1982	62,062.1	55,809.9	76,535.7	38,164.2
1983	58,982.5	48,739.7	—	38,235.4
1984	—	—	—	38,246.0

SOURCES: Annual Reports.

separately. These three agencies report on their operations on a cash flow basis. All report losses (money paid out when loan payments are not made by the borrowers) and recoveries (money subsequently recovered from delinquent borrowers). Hermes differentiates between "losses" and "reschedulings," but both represent a loss in an insurance sense, and both are in the loss figures reported here. The Eximbank, by contrast, has a much richer set of accounting procedures. Some guarantees and insurance policies are accounted for on a cash flow basis similar to those of the other programs. Sometimes, when Eximbank pays out for a guaranteed or insured payment that is delinquent, it "purchases" the payment. No losses (or subsequent recoveries) are recorded for such "purchases." Direct loan payments are almost never written off as lost. Instead, they are recorded as "delinquent" or, if applicable, "rescheduled." Apparently, purchased installments can appear both as "purchased" and "delinquent" or "purchased" and "rescheduled." An attempt, described in the Appendix, was made to put Eximbank's accounts on a basis similar to those of the other programs.

Table 7
OFFICIALLY SUPPORTED CREDITS AND EXPORTS, 1982

Export/ Credit	Germany	United Kingdom	France	United States
Millions of Dollars				
Total exports	\$176,435	\$97,017	\$96,694	\$212,276
Official loans	16,154	33,417	19,933	9,348
Percent of Total Exports				
Exports financed with official loans	9.2	33.4	20.6	4.4
Rank Order				
Exports	2	3	4	1
Official loans	3	1	2	4

SOURCES: Annual Reports and *International Financial Statistics*.

The losses and recoveries for the four programs are shown in Table 8. All the programs show substantial losses offset only in part by recoveries. The negative recoveries for the Eximbank are a relic of the way that losses and recoveries are estimated for Eximbank's direct loans. (See the Appendix.) In all likelihood, losses for the Eximbank should be higher and recoveries should also be higher. The net error is probably small.

Losses and recoveries tell only part of the story. Substantial losses and smaller recoveries alone do not necessarily mean that subsidies are present. Premiums collected by these agencies are supposed to offset these losses. An agency incurs financial losses only if the premiums are inadequate to cover losses and expenses. Unfortunately, cash flow accounting methods are inappropriate for insurance programs: they record premiums as income well in advance of the losses that these premiums are supposed to cover. A growing insurance program can show a cash flow profit in every year even though all the policies that it writes are ultimately unprofitable. In many ways, such a program resembles a Ponzi scheme. To accurately assess the performance of an insurance program, losses must be matched with the premiums paid to

Table 8
LOSSES AND RECOVERIES
(Millions of dollars)

Year	Agency			
	Hermes	ECGD	COFACE	Eximbank
Losses				
1979	234.1	559.7	880.3	145.0
1980	369.7	675.8	889.3	547.5
1981	338.5	615.5	719.8	235.7
1982	379.2	1,022.5	975.9	254.4
1983	597.5	1,012.4	—	475.6
1984	—	—	—	1,338.6
Recoveries				
1979	131.5	209.2	232.5	112.8
1980	136.4	187.5	341.7	131.6
1981	96.9	161.6	395.2	-79.8
1982	149.4	181.4	310.7	-36.6
1983	87.5	206.0	—	520.6
1984	—	—	—	308.6

SOURCES: Annual Reports, calculated for Eximbank.

cover them. Commercial insurance companies do use appropriate accrual accounting methods. The Appendix includes an analysis of the cash flow figures for each export credit agency to assess the underlying profitability of these policies.

Table 9 shows some of these results. The first set of figures shows the fraction of payments for each agency that did not arrive on time. Repayments are calculated from the outstanding balances and new loans in a method described in the Appendix. Losses are then divided by this number to find Payments Expected but not Received. These Payments Expected but not Received are not financial losses in themselves. Some of these missed payments ultimately will be paid. Further, premiums collected in the past offset these losses. These considerations are incorporated into the next set of numbers in Table 9, the subsidy rates. These numbers estimate the financial losses on loan payments due during each year. Premiums paid when these loans

Table 9
COMPARATIVE PERFORMANCE MEASURES

Year	Agency			
	Hermes	ECGD	COFACE	Eximbank
Payments Expected but Not Received (Percent of payments expected)				
1979	1.8	1.7	6.0	1.7
1980	2.6	1.8	5.3	6.1
1981	2.6	1.8	4.9	2.5
1982	2.9	3.2	7.1	2.7
1983	4.8	3.6	—	4.8
1984	—	—	—	13.1
Budgetary Subsidy Rate (Percent of new loans)				
1979	0.1	0.6	2.4	0.9
1980	0.5	0.5	1.9	4.0
1981	0.5	0.3	1.6	1.3
1982	0.7	0.9	3.0	1.4
1983	1.9	1.4	—	2.9
1984	—	—	—	8.8
Subsidies (Millions of dollars)				
1979	10.8	195.5	421.1	84.4
1980	84.1	214.9	357.9	507.0
1981	88.3	122.9	282.1	172.7
1982	111.6	316.1	592.0	127.1
1983	253.9	381.4	—	270.1
1984	—	—	—	761.9

were advanced, not current premiums related to future repayments, are balanced against payments that are not made (net of expected recoveries). Subsidy rates that are calculated on the loan payments due in a year are finally applied to larger figures of loans advanced in a year. This method uses losses suffered on loans in a given year as an approximation of expectations about repayments on loans advanced during that year. These prospective subsidy estimates are the last numbers shown in Table 9.

All of the agencies examined here show losses on their ongoing operations. There are differences, sometimes significant differences, between the losses suffered by the various agencies. Nonetheless, all show some ongoing financial costs and do in fact impose a financial burden on the governments underwriting them.

IV. ESTABLISHING PROPER FINANCIAL ACCOUNTS FOR EXIMBANK

This section examines the financial accounts of the Eximbank in detail as an example of the financial costs of export credit guarantee programs. Although this section is highly critical of the Eximbank's accounting methods, it is not meant to be critical of Eximbank's management in particular. In fact, Eximbank's management has been extremely forthcoming about the problems in their accounting methods, yet, for a variety of reasons including foreign policy considerations, Eximbank has not developed alternative methods. Nor is it likely that the accounting practices of other export credit agencies are much better. Eximbank was used as the example program here because more information is available about its financial performance than is available for other programs.

REPORTED PERFORMANCE

During its 50 year history, the Eximbank has paid over \$1 billion in dividends to the U.S. Treasury, has preserved the \$1 billion in capital initially provided by the Treasury, and built a loan loss reserve of \$1.4 billion from retained earnings. All this is from an institution that is supposedly providing large subsidies on the loans that it makes! How can large and persistent subsidies be reconciled with such admirable economic performance? They cannot be.

Eximbank's annual reports do not accurately reflect the bank's financial position. This is hardly a new result. Eximbank's auditors, the General Accounting Office, concluded its most recent report with an extremely adverse paragraph:

In our opinion, because of the materiality of the effect of not reflecting the full cost of loan losses, the accompanying financial statements do not reflect fairly the financial position of Eximbank as of September 30, 1984 and 1983, or the results of its operations and changes in its financial position for the years that ended in conformity with generally accepted accounting principles.¹

In plainer English, Eximbank has lost and will lose money on its loans but its accounts do not reflect this.

¹Eximbank Annual Report, 1984, p. 45.

Because the Eximbank's own records do not provide sufficient information about the true financial performance of the Eximbank, few conclusions can be drawn from them about the cost to the taxpayers of Eximbank's subsidies. The rest of this section attempts to put Eximbank's balance sheet in order. First, adjustments will be made that would bring Eximbank's books into conformance with generally accepted accounting principles (GAAP). Next, an estimate of Eximbank's net worth is developed. This is the amount of money for which Eximbank could be sold (or, if negative, the amount of money that the government would have to pay a private buyer to take over the Eximbank). "Book value" according to GAAP is supposed to approximate a company's market value, but Eximbank's "book value" and market value diverge significantly. Finally, the "opportunity cost" of Eximbank's operations is estimated. This is the additional money that the government's investment in Eximbank would have yielded in alternative investments—how much better or worse off would taxpayers be if the Eximbank had never been created.

A BALANCE SHEET APPROACH

Although it is possible to estimate Eximbank's profits and losses on a year by year basis, such calculations involve a high degree of uncertainty. Arbitrary timing decisions, such as the years in which loan losses are recorded, can lead to wide swings in annual earnings. Therefore, this section will adjust only the Eximbank's balance sheet. The balance sheet, as reported in the 1984 Annual Report, is shown in Table 10.

CONVERTING ACCOUNTS TO GAAP

In many of its accounting practices, the Eximbank does not conform to generally accepted accounting principles. An attempt is made here to recalculate Eximbank's accounts to conform to GAAP as well as normal practice in the banking profession. Many of the adjustments made here are only approximations. In fact, Eximbank claims that its accounting practices diverge from GAAP because of the difficulty in accurately making some of the adjustments that are made here.

Table 10
EXIMBANK BALANCE SHEET: SEPTEMBER 30, 1984

Assets	
Cash in U.S. Treasury and commercial banks	\$5,000,000
Investment in U.S. securities	27,100,000
Loans receivable	
Current loans	14,796,900,000
Delinquent loans	2,706,900,000
	17,503,800,000
Accrued interest and fees receivable	
Current interest and fees	434,700,000
Delinquent interest	278,100,000
	712,800,000
Other assets	
Repossessed equipment	9,400,000
Due from private export funding corporations	107,000,000
Due from foreign credit insurance associations	1,800,000
Other assets	46,000,000
	164,000,000
Total assets	\$18,412,700,000
Liabilities, Capital, and Reserve	
Borrowings	
Notes payable to PFB	\$15,620,000,000
Notes payable to PEPCO	15,300,000
Certificates of beneficial interest payable	6,100,000
Notes payable to U.S. institutions	12,400,000
	15,723,600,000
Other liabilities	
Accrued interest payable	129,800,000
Advances from PEPCO	80,000,000
Other credits	29,500,000
	239,300,000
Total liabilities	15,962,900,000
Capital stock held by U.S. Treasury	1,000,000,000
Reserve for contingencies and defaults	1,449,800,000
Grand total, liabilities, capital, reserve	\$18,412,700,000

Reserves

Eximbank sets aside all its retained earnings as a reserve for contingencies and defaults. The problem with this practice is that the reserve bears no relationship to the risks of its loans, guarantees, and insurance. For example, Eximbank will suffer losses if some of its borrowers default on their loans. These losses will reduce the reserve. But because Eximbank's loans have become riskier, its reserve should be growing.

How large a reserve should Eximbank set aside to cover expected losses on its loans, guarantees, and insurance? The General Accounting Office (GAO) estimated that Eximbank's reserve just for its outstanding and disbursed loans should be between \$1 billion and \$1.5 billion. Logically, additional amounts should be set aside to cover losses on Eximbank's guarantees, insurance, and loans that Eximbank is contractually committed to make but has not yet disbursed. GAO's low and high estimates of adequate reserves, based on the reserves that a commercial bank with a similar portfolio would be required to hold, represent 6.8 percent and 10.1 percent of loans outstanding. GAO calculated this range by applying various country risk estimates to the loans in Eximbank's portfolio. Since guarantees are usually of shorter duration than direct loans, only 50 percent of these rates will be used. Eximbank's insurance programs cover still shorter loans, and therefore only 25 percent of the loss rates for direct loans are used. Finally, Eximbank has authorized loans that it has yet to disburse. A reserve should also be held against these loans. Only 50 percent of the loss rates for direct loans will be used for these undisbursed loans because some of these loans will be cancelled before they are disbursed. A summary of the loss reserves for Eximbank is shown in Table 11. By a low estimate, Eximbank's loss reserve should be \$1.6 billion, and by a high estimate it should be \$2.5 billion. Thus Eximbank's reserves for contingencies and defaults, a total of \$1.4 billion, are insufficient to meet expected losses on loans.

Delinquent Interest

Eximbank includes delinquent interest in accounts as an asset. Delinquent interest exists only if a borrower is not even making interest payments on its loans and has not rescheduled its loans. Commercial banks normally do not accrue delinquent interest. It is counted as income only if it is paid. Eximbank assets include \$278 million in delinquent interest.

Table 11
LOSS RESERVES FOR THE EXIMBANK
(Millions of dollars unless otherwise noted)

Program	Amount at Risk	Loss Rate (Percent)		Reserve	
		Low	High	Low	High
Direct loans					
Disbursed	14,796.9	6.76	10.14	1,000	1,500
Undisbursed	8,186.5	3.38	5.07	277	415
Guarantees	6,500.9	3.38	5.07	223	334
Insurance	8,002.7	1.60	2.53	146	220
Total	38,246.0			1,646	2,469

Balance Sheet Revised to GAAP

A balance sheet for the Eximbank revised to GAAP standards is shown in Table 12. If the low risk estimate for the loss reserve is used, the Eximbank has lost \$475 million of its capital since inception. By the high risk estimate, the bank has suffered a capital loss of \$1,300 million. For the Eximbank to have broken even according to GAAP, the low risk estimate would have to be 40 percent too high.

ESTIMATING EXIMBANK'S MARKET VALUE

The market value of many companies differs greatly from their "book value." There is reason to believe that Eximbank's market value would fall far short of its "book value." To understand this shortfall, it is necessary to know how GAAP treat interest payments and how Eximbank prices and funds its loans.

Interest in GAAP is counted as income only as it is received and as an expense only as it is paid. Loans receivable are included as assets in the balance sheet at their cost less principal repayments. Borrowed funds are included as a liability at their original face value less repayments.

Most banks, including Eximbank, borrow money to cover their loans. Most banks try to match the maturity of their borrowed funds with the maturity of their outstanding loans to reduce risks from changes in interest rates. Thus a bank might make a loan for 10 years

Table 12

GAAP ADJUSTED EXIMBANK BALANCE SHEET: SEPTEMBER 30, 1984

Assets		
Cash in U.S. Treasury and commercial banks		\$5,000,000
Investment in U.S. securities		27,100,000
Loans receivable		
Current loans	14,796,900,000	
Delinquent loans	2,706,900,000	
		17,503,800,000
Accrued interest and fees receivable		
Current interest and fees	434,700,000	
Delinquent interest	-0-	
		434,700,000
Other assets		
Repossessed equipment	9,400,000	
Due from private export funding corporations	107,000,000	
Due from federal credit insurance associations	1,600,000	
Other assets	46,000,000	
		164,000,000
Total assets		\$18,134,800,000
Liabilities, Capital, and Reserve		
Borrowings		
Notes payable to FFB	\$15,000,000,000	
Notes payable to PEPCO	15,300,000	
Certificates of beneficial interest payable	6,100,000	
Notes payable to U.S. institutions	12,400,000	
		15,723,000,000
Other Liabilities		
Accrued interest payable	120,000,000	
Advances from PEPCO	80,000,000	
Other credits	20,000,000	
		230,000,000
Total liabilities		15,962,000,000
	(low risk)	(high risk)
Capital stock held by U.S. Treasury	826,700,000	-207,300,000
Reserve for contingencies and deficits	1,046,000,000	2,400,000,000
Grand total, liabilities, capital, reserve	\$18,134,000,000	\$18,134,000,000
Memorandum: Capital loss (current capital - original capital of \$1 billion)	- \$474,000,000	- \$1,207,300,000

at 12 percent interest and fund that loan by borrowing money for 10 years at 11 percent interest. Thus the bank will make a profit of 1 percent per year on the outstanding balance of the loan if the loan is repaid as agreed. If these two loans were the only items on a bank's balance sheet, it would have zero book value: the two loans exactly offset each other. Yet the bank would have market value: the stream of profit worth 1 percent of the outstanding balance is worth something, but not according to GAAP. This value can be calculated by discounting the future profit stream.

Eximbank, however, often lends at less than its cost of funds. If Eximbank stopped making loans today, it would lose money for years to come on its outstanding loans. During fiscal year 1984, for instance, Eximbank paid out \$283 million more in interest than it collected. Using information in Eximbank's annual reports going back to 1977, amounts outstanding on individual loans for each year after they were advanced were calculated. It was assumed that all loans were funded over their maturity at the average cost of Eximbank borrowings from the Treasury for the years in which the loans were advanced. The interest deficiency was calculated loan by loan through the end of each repayment period. The total interest rate deficiencies from 1985 onward are \$2.7 billion. If these deficiencies are discounted at 10 percent per year, their present value is \$1.8 billion.

Thus the market value of Eximbank should be \$1.8 billion less than its book value. A balance sheet adjusted to this estimate of market value is shown in Table 13. Eximbank thus has a negative net worth of between \$1.2 billion and \$2 billion. It has suffered a capital loss of between \$2.2 and \$3.0 billion since inception.

OPPORTUNITY COST OF THE EXIMBANK

The current market value of the Eximbank is calculated above as somewhere between \$1.2 and \$2 billion in the hole. This is between \$2.2 and \$3 billion less than the value of the capital stock, \$1.0 billion, that the Treasury initially provided to Eximbank. But is this initial \$1.0 billion a reasonable number of what the Eximbank should be worth? Most investors would expect some profits over 50 years. Opportunity cost looks at the difference between what the Eximbank should be worth and what it actually is worth. "Should be worth" here means the value that the funds invested in Eximbank would have today if they had been invested elsewhere. In other words, how much lower would the federal debt be today if the Eximbank had never been formed?

Table 13

MARKET VALUE EXIMBANK BALANCE SHEET: SEPTEMBER 30, 1984

Assets		
Cash in U.S. Treasury and commercial banks	\$6,000,000,000	
Investment in U.S. securities	27,100,000,000	
Loans receivable		
Current loans	14,796,000,000	
Delinquent loans	2,706,000,000	
		17,503,000,000
Accrued interest and fees receivable		
Current interest and fees	434,700,000	
Delinquent interest	-0-	
		434,700,000
Other assets		
Repossessed equipment	9,400,000	
Due from private export funding corporations	107,000,000	
Due from foreign credit insurance associations	1,000,000	
Other assets	46,000,000	
		164,000,000
Total assets		\$18,134,000,000
Liabilities, Capital, and Reserve		
Borrowings		
Notes payable to FFB	\$15,000,000,000	
Notes payable to PEPCO	15,300,000	
Certificates of beneficial interest payable	6,100,000	
Notes payable to U.S. institutions	12,400,000	
		15,723,000,000
Other liabilities		
Accrued interest payable	129,000,000	
Advances from PEPCO	80,000,000	
Other credits	29,500,000	
		238,500,000
Total liabilities		15,982,000,000
	(low risk)	(high risk)
Capital stock held by U.S. Treasury	-1,242,000,000	-2,065,000,000
Reserve for contingencies and defaults	1,646,000,000	2,460,000,000
Reserve for interest rate deficiencies	1,767,700,000	1,767,700,000
Grand total, liabilities, capital, reserve	\$18,134,000,000	\$18,134,000,000
Memorandum: Capital loss (current capital - original capital of \$1 billion)	- \$3,942,000,000	- \$3,065,000,000

The initial capital infusions to the Eximbank, beginning in 1937, were increased each year by the Treasury Bill rate, and the dividends each year were subtracted from this balance. If the capital invested in the Eximbank had earned interest only at the Treasury Bill rate, the Eximbank should be worth about \$2.0 billion today. Since the Eximbank is in fact worth \$3.2 to \$4.0 billion less than this amount, the opportunity cost of the Eximbank to the taxpayers has been \$3.2 to \$4.0 billion.

V. CONCLUSIONS

Officially supported export credits do in fact impose large financial burdens on the governments that advance them. The costs are not, in general, reflected in the financial statements of these agencies. These costs will, over time, run at about the same level as the subsidies embedded in these loans. Claims that these programs are costless or profitable are wholly without basis. This report has not discussed the benefits, if any, of subsidizing export credits. Nevertheless, if budgetary decisions on export credit agencies have previously been made by weighing perceived benefits against a ridiculously low measure of costs, a more accurate measure of costs would probably induce policymakers to reduce the scale of official export lending.

For years, negotiations have been conducted through the Organization for Economic Cooperation and Development to reduce the level of subsidies present in officially supported export credits. Most nations agree that subsidizing exports is collectively irrational even if it is individually rational in some cases. Past agreements, especially the consensus rate agreements, probably have limited subsidy flows from levels they might have otherwise attained.¹ Nevertheless, the insurance subsidy component of export credit subsidies is still large and growing. A fuller recognition of the costs of these programs might spur additional negotiations.

One reason that past negotiations on export credits have had so little success is that they have focused on interest rate subsidies, not insurance type subsidies. Clearly, the insurance type subsidies are sizable. Some have suggested that the Eximbank insure and guarantee exports more and subsidize interest rates less. Paradoxically, such a plan could ultimately cost taxpayers more. Loans with subsidized interest rates are valuable to all borrowers, so such loans are advanced to nations that are good credit risks as well as those that are poor credit risks. Guarantees and insurance are generally valuable only to countries that are poor credit risks. If the Eximbank stops interest rate subsidies (which cost taxpayers money with certainty), the mix of debtor nations that it serves might deteriorate so much that total losses are higher than with interest rate subsidies.

¹See Daniel F. Kohler and Peter Reuter, *The Gentlemen's Agreement: Honor Among Nations*, The RAND Corporation, N-2536-USDP, October 1986.

Appendix

DERIVATION OF FINANCIAL PERFORMANCE MEASURES

The accounts of Hermes, ECGD, COFACE, and Eximbank in their home currencies are reported in Tables A.1 through A.4. These agencies normally report exposure, new business, losses, recoveries, sometimes reschedulings and recoveries of reschedulings, fees or premiums collected, and administrative expenses. The exchange rates are from *International Financial Statistics*. All the original figures are on a fiscal year basis, but are treated as though they are on a calendar year basis. The repayments figures, the payments expected but not received, and the subsidy rate are all calculated from the original accounts.

Repayments

In theory, repayments can be calculated exactly as new business less the increase in exposure. Unfortunately, the data do not support this calculation: repayments are occasionally negative. There are several possible sources of this error. These programs may on occasion lend in currencies other than their accounting currency. Valuation changes might confound the otherwise correct calculation of repayments. Large reschedulings might also be treated unusually in these accounts. Because of these problems, another method was normally used to calculate repayments.

The exposure of an export credit program (the amount of money that the program has at risk) is equal to the remaining balance on new loans advanced in previous years plus new loans. It is possible to use the historical record of new loans and exposure to calculate the average term of credits advanced under the program. If a program makes the same mix and amounts of loans in every year, it will eventually reach a steady state: the ratio of outstanding loans to new loans will approach a constant. Even though none of these programs is in a steady state, an assumption of a steady state will be used here. The implications of this assumption are discussed below.

Officially supported export credits are almost always repaid in equal semiannual installments of principal. Such a repayment schedule is one part of the "gentlemen's agreement" on export credits. If a loan is advanced for T years, the average dollar of principal for the loan will

Table A.1
PERFORMANCE OF HERMES
(Millions of Deutsch marks)

Year	Exposure	New Business	Losses	Resch.	Loss Recov.	Resch. Rec.	Fees	Adm. Costs	Repayments
1973	30700	9300	—	—	—	—	139	17	—
1974	39700	15200	89	177	96	69	151	21	6200
1975	48900	19800	29	41	13	94	270	25	10600
1976	69300	26200	46	13	10	86	327	29	5800
1977	82200	33700	156	89	24	318	407	35	20800
1978	89200	25900	295	27	29	96	358	35	18900
1979	102600	25100	368	61	38	203	378	38	23656
1980	116500	28500	641	31	48	200	470	46	26035
1981	135800	36400	348	417	58	161	553	54	28882
1982	150600	39200	796	124	259	103	661	65	31235
1983	150600	33300	1488	38	104	119	553	63	31501
1984	—	—	—	—	—	—	—	—	—

Year	Payments Expected but Not Received (%)	Subsidy Rate (%)	Exchange Rate
1973	—	—	—
1974	4.1	0.9	2.5878
1975	0.7	-1.8	2.4603
1976	1.0	-4.4	2.518
1977	1.2	-1.0	2.3222
1978	1.7	-0.5	2.0086
1979	1.8	0.1	1.8329
1980	2.6	0.5	1.8177
1981	2.6	0.5	2.2600
1982	2.9	0.7	2.4266
1983	4.8	1.9	2.5533
1984	—	—	2.8459

NOTES: Hermes "losses" are the sum of political and commercial losses.
Recovery ratio is based on 1978-1983: 30.6 percent. Estimated term: 6.3 years.

Table A.2

FINANCIAL PERFORMANCE OF THE EXPORT CREDIT GUARANTEE DEPARTMENT
(Millions of British pounds)

Year	Exposure	New Business	Losses	Loss Recov.	Fees	Adm. Costs	Repayments
1971	4810	3813	32	26.4	22.2	—	3484
1972	5110	3999	39	10.1	24.4	—	3877
1973	6310	4789	31	15.4	37.7	8.4	4369
1974	7846	6535	30	11.9	52.5	10.3	5591
1975	10104	8391	42	17.5	59.6	13.9	7350
1976	14362	11728	63	27.1	93.8	16.6	9910
1977	15339	12940	94	26.7	102.8	18.5	12167
1978	15825	14515	134	43.7	107.4	19.8	13643
1979	17985	16235	264	98.6	151.8	22.6	15272
1980	19300	17048	291	80.6	150.6	28.6	16551
1981	25530	17502	304	79.7	236.7	28.5	17231
1982	31768	19090	584	103.6	348.2	30.3	18243
1983	32129	17774	667	135.8	177.5	31.9	18393
1984	—	—	—	—	—	—	—

Year	Payments Expected but Not Received (%)	Subsidy Rate (%)	Exchange Rate
1971	0.9	—	—
1972	1.0	—	—
1973	0.7	—	—
1974	0.5	—	0.4275
1975	0.6	-0.2	0.4501
1976	0.6	-0.1	0.5536
1977	0.8	-0.1	0.5729
1978	1.0	0.1	0.5210
1979	1.7	0.6	0.4713
1980	1.8	0.5	0.4299
1981	1.8	0.3	0.4931
1982	3.2	0.9	0.5713
1983	3.6	1.4	0.6592
1984	—	—	0.7483

NOTES: Recovery ratio is based on 1969-1983: 26.4 percent. Estimated term: 2.1 years.

Table A.3
FINANCIAL PERFORMANCE OF COFACE
(Millions of French francs)

Year	Exposure	New Business	Losses	Loss Recov.	Fees	Adm. Costs	Repayments
1973	72000	18000	156	188	268	20	—
1974	108000	24300	328	257	367	27	-11700
1975	137000	55500	570	172	568	61	26500
1976	202000	69800	817	296	915	77	4800
1977	246000	97000	811	258	1202	106	53000
1978	246000	75900	2112	686	1324	83	75900
1979	259000	73200	3745	989	1335	74	62702
1980	290000	78000	3758	1444	1399	88	71472
1981	380000	95000	3912	2148	1810	108	79723
1982	503000	131000	6414	2042	2077	144	90201
1983	—	—	—	—	—	—	—
1984	—	—	—	—	—	—	—

Year	Payments Expected but Not Received (%)	Subsidy Rate (%)	Exchange Rate
1973	—	—	—
1974	-2.9	1.2	4.8141
1975	2.1	-0.5	4.2862
1976	14.5	-5.7	4.779
1977	1.5	-1.1	4.9136
1978	2.7	0.1	4.5131
1979	6.0	2.4	4.2544
1980	5.3	1.9	4.2256
1981	4.9	1.6	5.4346
1982	7.1	3.0	6.5721
1983	—	—	7.6213
1984	—	—	8.7391

NOTES: COFACE administrative expenses were estimated for several years based on historical ratios of expenses to new loans. Recovery ratio is based on 1973-1982: 36.7 percent. Estimated term: 6.4 years.

Table A.4

FINANCIAL PERFORMANCE OF EXIMBANK
(Millions of dollars)

Year	Exposure	New Business	Losses	Resch.	Loss Recov.	Resch. Rec.	Fees	Adm. Costs	Repayments
1973	—	8514	—	—	—	—	26	12	—
1974	2330	9100	—	—	—	—	28	9	—
1975	2587	8315	—	59	—	—	34	10	5740
1976	2838	10071	—	48	—	171	42	11	7559
1977	2559	5600	62	40	15	-79	53	14	8390
1978	2639	7376	86	54	11	6	47	13	6582
1979	2869	9491	118	27	12	101	54	13	8357
1980	3316	12609	461	86	53	79	61	14	8922
1981	3840	12854	138	98	46	-126	72	14	9585
1982	3816	9348	155	100	26	-62	119	14	9578
1983	3823	9369	406	70	467	54	75	15	9897
1984	3824	8616	955	383	278	31	79	17	10199

Year	Payments Expected but Not Received (%)	Budgetary Subsidy Rate (%)	Exchange Rate
1973	—	—	—
1974	—	—	1.0
1975	—	—	1.0
1976	—	—	1.0
1977	1.2	0.4	1.0
1978	2.1	1.0	1.0
1979	1.7	0.9	1.0
1980	6.1	4.0	1.0
1981	2.5	1.3	1.0
1982	2.7	1.4	1.0
1983	4.8	2.9	1.0
1984	13.1	8.8	1.0

NOTES: Recovery ratio is based on 1977-1984: 28.1 percent. Estimated term: 6.4 years.

remain outstanding for $(T + 1/2)/2$ years. In a steady state, the ratio of loans outstanding to new loans will equal the average number of years that a loan remains outstanding. If this ratio is R , then

$$R = (T + 1/2)/2, \text{ or } T = 2R - 1/2$$

The ratio of loans outstanding to new loans was taken for as many years as possible, and these ratios were averaged. The results of this calculation are shown in Table A.5.

Repayments due in a given year can be approximated from the average term. For instance, the average term of credits advanced by Hermes is 6.3 years. The new loans advanced for the current and the previous five years are added together and divided by 6.3. To this result is added the new loans advanced 6 years ago, multiplied by .3, and divided by 6.3. This method is used whenever there are enough observations on new loans advanced. Otherwise, repayments are new loans for a year less the increase in exposure over the previous year.

The assumption of a steady state has been used to make most of the estimates of repayments due. None of these programs are in a steady state; they are all growing. Because they are growing, the procedure outlined above will underestimate the average term. As an extreme example, a program that has no loans advanced or outstanding in one year and makes any loans in the next year will have a ratio of outstanding loans to new loans of one or less. Estimated terms will thus be 1.5 years or less, no matter what the true terms of the new credits are. An underestimate of terms in a growing program will overestimate repayments. The loss estimates produced here are thus conservative (low) because losses will be expressed as a percentage of a high estimate of payments due.

Table A.5
RATIOS, TERMS, AND RECOVERY RATES

Item	Hermes	ECGD	COFACE	Eximbank
Ratio of outstanding loans to new loans	3.4	1.3	3.5	3.5
Estimated average term (years)	6.3	2.1	6.4	6.4
Average recovery rate (percent)	30.6	26.4	36.7	28.1

Payments Expected but Not Received

Payments expected but not received can be calculated from reported losses and reschedulings. If a contracted payment does not arrive, it must either be recorded as a loss or a rescheduling. These non-payments are then divided by the repayments due for a program.

Budgetary Subsidy Rate

The budgetary subsidy rates are calculated as fractions of payments due in a year. This is because losses on loans will not be known until the loans are due. For each year, losses and reschedulings for a program are added together. Expected recoveries of these losses are based on historical recovery rates: the sum of recoveries divided by the sum of losses for as many years back as reasonable data exist. Losses net of recoveries are what each agency must cover out of the fees that it collects. But current fees are not a correct measure; they are supposed to cover losses on repayments due in the future. Using a procedure analogous to that for estimating repayments, the fees collected when funds were initially advanced are calculated. Similarly, administrative expenses of the agencies in previous years are allocated to the repayments due in the current year. The budgetary costs of these programs for the repayments due in a year are losses net of recoveries for the year,¹ reduced by the fees collected for these payments when they were advanced, and increased by the administrative expenses incurred as a result of these payments. These budgetary costs are then divided by payments due.

Subsidy Levels

The budgetary costs of payments due in a year are not a particularly interesting number. More important are the budgetary costs of loans advanced during a year. These numbers (not reported in this Appendix but included in Sec. III) take the budgetary subsidy rate calculated above for repayments due during a year and apply this rate to new loans advanced during a year. Implicit in this calculation is the assumption that losses on loans made during a year will be the same as losses on repayments due during a year.

¹Loss is used here as a generic term that includes both losses and reschedulings.

Sample Calculations

A demonstration of the calculations used in this report might make the calculations clearer and show why cash flow accounting methods do not accurately reflect the financial performance of export credit agencies. In 1981, for instance, COFACE had losses of 3912 million francs and recoveries of 2148 million francs. Premiums collected were 1810 million francs. COFACE reports a surplus on this business of 46 million francs ($2148 + 1810 - 3912$). If administrative expenses of 108 million francs are subtracted from this surplus, the cash flow performance of COFACE's export insurance function was a loss of 62 million francs for the year, a modest amount.

Unfortunately, the premiums of 1810 million francs were collected to cover losses in the future, not current losses. Premiums collected to cover current losses amount to only 1279 million francs. Similarly, the recoveries of 2148 million francs pertain not to current losses but to losses suffered in the past, including unprecedented losses in 1980. Experience indicates that only 1434 million francs of the 3912 million lost will ultimately be recovered. On the positive side, administrative expenses for these amounted to only 87 million francs. Thus the loan payments that came due in 1981 lost 1288 million francs. Cash flow accounts underestimate these losses by a factor of 20!

Eximbank Accounts

Eximbank uses accounting methods different from any of its competitors. Various approximations and estimates were made to place Eximbank's finances on a basis comparable with other programs. "Losses" for Eximbank were calculated as the sum of (1) claims paid on guarantees, (2) claims paid on insurance, (3) purchases of insured and guaranteed loans, and (4) increases in delinquent installments on a country by country basis, less (5) the increase in delinquent installments that are rescheduled. "Reschedulings" simply include new reschedulings. "Loss recoveries" include (1) recovered claims for insurance, (2) recovered claims for guarantees, and (3) recoveries on purchased insured and guaranteed loans, less (4) the reduction in delinquent installments that are rescheduled. "Rescheduling recoveries" are equal to the reduction in total rescheduled loans (both delinquent and current) plus new rescheduled loans.

BIBLIOGRAPHY

Baron, David, *The Export-Import Bank*, Academic Press, New York, 1983.

Boyd, John, "EXIM Lending: A Federal Program that Costs Too Much," *Federal Reserve Bank of Minneapolis Quarterly Review*, Winter 1982.

Compagnie Francaise d'Assurance pour le Commerce Exterieur, *Exercice*, Paris, various years.

Eisenstat, Stuart, "EXIM Bank: A Wise Investment," *Aerospace*, Spring 1982.

Export Credit Guarantee Department, *Trading Results*, London, various years.

Export-Import Bank of the United States, *Annual Report*, Washington, D.C., various years.

Feinberg, Richard E., *Subsidizing Success: The Export-Import Bank in the U.S. Economy*, Cambridge University Press, New York, 1982.

Hermes Kreditveraicherungs AG, *Ausfuhrgarantien und Ausfuhrburogeschäften der Bundesrepublik Deutschland*, Hamburg, various years.

International Financial Statistics, Yearbook, International Monetary Fund, Washington, D.C., 1985.

Kohler, D. F., and K. T. Fisher, *Subsidization of East-West Trade Through Credit Insurance and Loan Guarantees*, The RAND Corporation, N-1951-USDP, January 1983.

Kohler, D. F. and P. Reuter, *The Gentlemen's Agreement: Honor Among Nations*, The RAND Corporation, N-2536-USDP, October 1986.

Kohler, D. F., S. W. Salant, D. P. Henry, K. W. Crane, and M. M. Hopkins, *Economic Cost and Benefits of Subsidizing Western Credits to the East*, The RAND Corporation, R-3129-USDP, July 1984.

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER R-3491-USDP	2. GOVT ACCESSION NO. AD-74183	3. RECIPIENT'S CATALOG NUMBER 296
4. TITLE (and Subtitle) The Financial Cost of Export Credit Guarantee Programs	5. TYPE OF REPORT & PERIOD COVERED	
7. AUTHOR(s) Donald Putnam Henry	6. PERFORMING ORG. REPORT NUMBER	
9. PERFORMING ORGANIZATION NAME AND ADDRESS The RAND Corporation 1700 Main Street Santa Monica, CA 90406	10. CONTRACT OR GRANT NUMBER(S) MDA903-85-C-0030	
11. CONTROLLING OFFICE NAME AND ADDRESS	12. REPORT DATE June 1987	
12. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) Under Secretary of Defense for Policy Washington, DC 20301	13. NUMBER OF PAGES 37	
14. DISTRIBUTION STATEMENT (of this Report) Approved for Public Release - Distribution Unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report) No Restrictions		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Exports Banking International Trade Guarantees Costs		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) see reverse side		

This report examines the financial performance of export credit guarantee programs. This performance is closely related to the subsidization of official export credits. The Export-Import Bank of the United States (Eximbank), contrary to its financial reports, is shown to be deeply in the red. Comparisons are then made between Eximbank's performance and the performance of similar agencies in other Organization for Economic Cooperation and Development (OECD) nations.

Keywords:

banking; international trade.